UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/245,025	02/05/99	GERARD G	0942.4330005

HM22/0814

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EXAMINER	
TUNG, P	
ART UNIT	**PAPER NUMBER**
1652	14

DATE MAILED: 08/14/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.	Applicant(s)
09/245,025	Gerarf et al.
Examiner	**Art Unit**
Peter Tung	1652

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on _____.

2a) ☐ This action is **FINAL.** 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-9, 22-25, 41-45, 81-88, and 116* is/are pending in the application.

4a) Of the above, claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-9, 22-25, 41-45, 81-88, and 116* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15) ☐ Notice of References Cited (PTO-892)
16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). *3-6, 11*
18) ☐ Interview Summary (PTO-413) Paper No(s). _____
19) ☐ Notice of Informal Patent Application (PTO-152)
20) ☐ Other:

DETAILED ACTION

1. Claims 1-9, 22-25, 41-45 and 81-88, 116 are pending.

Election/Restriction

2. Applicant's election with traverse of in Paper No. 10 is acknowledged. The traversal is on the ground(s) that the independent species are closely related in subject matter and that there has been no showing why a serious burden would be imposed if restriction were not required. This is not found persuasive because: 1) the inventions are independent and distinct as the enzyme species are structurally different and are from different species of retroviruses and 2) as the retroviruses claimed are of different species, a search of the non-patent literature would require searching of all the claimed species and would be an undue burden.

The requirement is still deemed proper and is therefore made FINAL.

Claim Objections

3. Claim 8 is objected to because of the following informalities: Trademarks are not permitted in claims. Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any

person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claim 1 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for the DNA polymerases of the instant claim, does not reasonably provide enablement for derivatives, variants or mutants thereof. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to the invention commensurate in scope with these claims. Enablement requires that the specification teach those in the art to make and use the invention without undue experimentation. Factors to be considered in determining whether a disclosure would require undue experimentation include (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims. The breadth of the claim encompasses any derivatives, variants or mutants of the group of DNA polymerases. However, insufficient guidance and examples are provided on how to make and use derivatives, variants or mutants of said DNA polymerases. The prior art does not teach how to make and use any derivative, variant or mutant of said DNA polymerases. The skill of those in the art is low in making and using derivatives, variants or mutants of said DNA polymerases. There is unpredictability in the art in making and using derivatives, variants or mutants of enzymes without sufficient guidance, direction or examples as such derivatives, variants or mutants of an enzyme may be inactive. Absent guidance

or examples of how to make and use derivatives, variants or mutants of said DNA polymerases, undue experimentation would be required by one of skill in the art to enable the full scope of the claimed invention.

6. Claims 5 , 6 and 81-88 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for AMV H^- reverse transcriptase or a kit comprising an ASLV RT, does not reasonably provide enablement for derivatives, variants or mutants thereof. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to the invention commensurate in scope with these claims. Enablement requires that the specification teach those in the art to make and use the invention without undue experimentation. Factors to be considered in determining whether a disclosure would require undue experimentation include (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims. The breadth of the claim encompasses any derivatives, variants or mutants of AMV H^- reverse transcriptase or of an ASLV RT. However, insufficient guidance and examples are provided on how to make and use derivatives, variants or mutants of AMV H^- reverse transcriptase or an ASLV RT. The prior art does not teach how to make and use any derivative, variant or mutant of AMV H^- reverse transcriptase or an ASLV RT. The skill of those in the art is low in making and using derivatives, variants or mutants of AMV H^- reverse transcriptase or an ASLV RT. There is

unpredictability in the art in making and using derivatives, variants or mutants of enzymes without sufficient guidance, direction or examples as such derivatives, variants or mutants of an enzyme may be inactive. Absent guidance or examples of how to make and use derivatives, variants or mutants of AMV H^- reverse transcriptase or an ASLV RT, undue experimentation would be required by one of skill in the art to enable the full scope of the claimed invention.

7. Claim 6 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The AMV αH^- reverse transcriptase and AMV $\beta p4/\beta p4$ reverse transcriptase must be obtainable by a repeatable method set forth in the specification or otherwise be readily available to the public. It is unclear as to how an AMV αH^- reverse transcriptase is obtained or what amino acid change occurs to obtain an AMV αH^- reverse transcriptase. How AMV $\beta p4/\beta p4$ reverse transcriptase is obtained or what it is does not appear to be disclosed. If a deposit is made under the terms of the Budapest Treaty, then an affidavit or declaration by applicants or someone associated with the patent owner who is in a position to make such assurances, or a statement by an attorney of record over his or her signature, stating that the deposit has been made under the terms of the Budapest Treaty and that all restrictions imposed by the depositor on the availability to the public of the deposited material will be irrevocably removed upon the granting of a patent, would satisfy the deposit requirements. *See 37 CFR 1.808.* Further, the record must be clear that the deposit will be maintained in a public depository for a period of 30 years after the date of deposit or 5

years after the last request for a sample **or for the enforceable life of the patent whichever is longer.** See 37 CFR 1.806. If the deposit has not been made under the Budapest treaty, then an affidavit or declaration by applicants or someone associated with the patent owner who is in a position to make such assurances, or a statement by an attorney of record over his or her signature must be made, stating that the deposit has been made at an acceptable depository and that the criteria set forth in 37 CFR 1.801-1.809, have been met. Applicant's attention is directed to *In re Lundak*, 773 F.2d. 1216, 227 USPQ 90 (CAFC 1985), and 37 CFR 1.801-1.809 for further information concerning deposit practice.

8. ***Claim Rejections - 35 USC § 102***

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1-3, 8 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Aatsinki et al. (cited in IDS). Aatsinki et al. teach (page 282, Table 1) a composition for one-step reverse transcription polymerase chain reaction comprising both avian myeloblastosis virus reverse transcriptase and *Thermus aquaticus* DNA polymerase, both which have reverse transcriptase activity and different transcription pause sites. The instant claims are therefore anticipated by Aatsinki et al.

11. Claims 41, 42 and 45 are rejected under 35 U.S.C. 102(b) as being anticipated by Grandgenett et al. (cited in IDS). Grandgenett et al. teach (page 234, "Discussion") an avian myeloblastosis virus reverse transcriptase, which is that of the instant claims.

12. Claims 41-44 and 116 are rejected under 35 U.S.C. 102(b) as being anticipated by Kotewicz et al. (U.S. Patent No. 5,244,797, cited in IDS). Kotewicz et al. teach (claims 1 and 2, cols. 19 and 20) Rous sarcoma virus reverse transcriptase having reduced RNase H activity, which is that of the instant claims.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

14. Claims 4, 5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aatsinki et al. (cited in IDS) as applied to claim 1 above, and further in view of Kotewicz et al. (U.S. Patent No. 5,244,797, cited in IDS). The teachings of Aatsinki et al. have been discussed supra. Aatsinki et al. do not teach a composition comprising a reverse transcriptase with reduced RNase H activity. Kotewicz et al. teach a Rous sarcoma reverse transcriptase with reduced RNase H activity. Kotewicz et al. do not teach a composition comprising a Rous sarcoma reverse transcriptase with reduced RNase H activity and Taq DNA polymerase. A composition comprising Taq DNA polymerase, as taught by Aatsinki et al, and a Rous sarcoma reverse transcriptase with reduced RNase H activity, as taught by Kotewicz et al., would have been obvious to one of ordinary skill in the art at the time the invention was made for the benefit of improved one-step reverse transcription PCR. One of ordinary skill is motivated to substitute a reverse transcriptase with reduced RNase H activity in the composition comprising AMV RT and Taq polymerase as Kotewicz et al. teach that such a reverse transcriptase would be able to synthesize cDNA from mRNA without the problem associated with RNase H activity which degrades mRNA template during first strand synthesis (col. 9, lines 10-13). One of ordinary skill in the art would have a reasonable expectation of success at doing this as the RSV RT taught by Kotewicz et al. would be expected to be able to substitute for the AMV RT in the composition taught by Aatsinki et al. Therefore the invention as a whole would have been prima facie obvious to a person of ordinary skill in the art at the time the invention was made.

15. Claims 22-25 rejected under 35 U.S.C. 103(a) as being unpatentable over Aatsinki et al. (cited in IDS). Aatsinki et al. teach (page 282, Table 1) a composition for one-step reverse transcription polymerase chain reaction comprising both avian myeloblastosis virus reverse transcriptase and *Thermus aquaticus* DNA polymerase. Aatsinki et al. do not teach a kit for use in reverse transcription. A kit for reverse transcription comprising the components as taught by Aatsinki et al. would have been obvious to one of ordinary skill in the art at the time the invention was made for the benefit of a standardized reagent for performing RT-PCR. One of ordinary skill in the art would have a reasonable expectation of success at doing this as kits comprising the components of RT-PCR are well known in the art. Therefore the invention as a whole would have been prima facie obvious to a person of ordinary skill in the art at the time the invention was made.

16. Claims 81-83 and 85-87 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kotewicz et al. (U.S. Patent No. 5,244,797, cited in IDS).Kotewicz et al. teach (claims 1 and 2, cols. 19 and 20) Rous sarcoma virus reverse transcriptase. Kotewicz et al. do not teach a kit comprising the ASLV RT of RSV. A kit comprising the Rous sarcoma virus reverse transcriptase as taught by Kotewicz et al. would have been obvious to one of ordinary skill in the art at the time the invention was made for the benefit of a standardized reagent for performing reverse transcription. One of ordinary skill in the art would have a reasonable expectation of success at doing this as kits comprising components for reverse transcription are well known in the art.

Therefore the invention as a whole would have been prima facie obvious to a person of ordinary skill in the art at the time the invention was made.

17. Claims 81, 82, 84-86, 88 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grandgenett et al. (cited in IDS).Grandgenett et al. teach (page 234, "Discussion") an avian myeloblastosis virus reverse transcriptase. Grandgenett et al. do not teach a kit comprising the AMV RT. A kit comprising the avian myeloblastosis virus reverse transcriptase as taught by Grandgenett et al. would have been obvious to one of ordinary skill in the art at the time the invention was made for the benefit of a standardized reagent for performing reverse transcription. One of ordinary skill in the art would have a reasonable expectation of success at doing this as kits comprising components for reverse transcription are well known in the art. Therefore the invention as a whole would have been prima facie obvious to a person of ordinary skill in the art at the time the invention was made.

Double Patenting

18. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

19. Claims 43 and 44 are rejected under the judicially created doctrine of double patenting over claims 1 and 2 of U. S. Patent No. 5,244,797 since the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent.

The subject matter claimed in the instant application is fully disclosed in the patent and is covered by the patent since the patent and the application are claiming common subject matter, as follows: an RSV reverse transcriptase with reduced RNase H activity.

Furthermore, there is no apparent reason why applicant was prevented from presenting claims corresponding to those of the instant application during prosecution of the application which matured into a patent. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

20. Claims 43 and 44 are rejected under the judicially created doctrine of double patenting over claims 1, 3-19, 22, 24-47, 51, 54-79, 83, 86-109, 113, 116-126, 128-139, 141-151, 153-182 and 184 of U. S. Patent No. 6,063,608 since the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent.

The subject matter claimed in the instant application is fully disclosed in the patent and is covered by the patent since the patent and the application are claiming common subject matter, as follows: an RSV reverse transcriptase with reduced RNase H activity.

Furthermore, there is no apparent reason why applicant was prevented from presenting claims corresponding to those of the instant application during prosecution of the application which matured into a patent. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

Allowable Subject Matter

21. Claim 6 is allowable over the prior art of record. The prior art of record does not teach or suggest a composition comprising AMV reverse transcriptase deficient in RNase H activity.

22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter Tung, Ph.D. whose telephone number is (703) 308-9436. The examiner can normally be reached on Monday-Friday from 9:00 to 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ponnathapu Achutamurthy, Ph.D., can be reached on (703) 308-3804. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-0294.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0196.

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